

1 WHAT IS CLAIMED IS:

2 1. A vehicle surroundings monitoring apparatus for  
3 monitoring surroundings of an own vehicle, comprising:

4 imaging means for taking picture images and for  
5 outputting image information;

6 radar means;

7 first solid object detecting means for detecting first  
8 solid objects based on said image information;

9 second solid object detecting means for detecting  
10 second solid objects based on signals from said radar means;

11 fusion solid object establishing means for  
12 establishing fusion solid objects by fusing said first solid  
13 objects and said second solid objects;

14 reliability judging means for judging whether or not  
15 said fusion solid objects have a specified level of reliability;  
16 and

17 preceding vehicle selecting means for selecting a  
18 preceding vehicle from said fusion solid objects having said  
19 specified level of reliability.

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21 2. A vehicle surroundings monitoring apparatus for  
22 monitoring surroundings of an own vehicle, comprising:

23 imaging means for taking picture images and for  
24 outputting image information;

25 radar means;

1           first solid object detecting means for detecting first  
2 solid objects based on said image information;  
3           second solid object detecting means for detecting  
4 second solid objects based on signals from said radar means;  
5           fusion     solid   object   establishing   means   for  
6 establishing fusion solid objects composed of single first solid  
7 objects, single second solid objects and a combination of said  
8 first solid objects and said second solid objects by fusing said  
9 first solid objects and said second solid objects;  
10          first reliability judging means for judging a degree  
11 of reliability of said fusion solid objects based on a detecting  
12 situation of said respective fusion solid objects by said first  
13 solid object detecting means;  
14          second reliability judging means for judging a degree  
15 of reliability of said fusion solid objects based on a detecting  
16 situation of said respective fusion solid objects by said second  
17 solid object detecting means; and  
18          preceding vehicle selecting means for selecting a  
19 preceding vehicle from said fusion solid objects when it is judged  
20 that said fusion solid objects have a specified level of  
21 reliability according to either of said first reliability judging  
22 means and said second reliability judging means.  
23 3.       The vehicle surroundings monitoring apparatus  
24 according to claim 2, wherein said first solid object detecting  
25 means register a solid object having at least two surfaces

1 connected with each other through a corner as a corner-like solid  
2 object and said first reliability judging means judge said  
3 reliability of said respective fusion solid objects based on the  
4 number of times of coincidence of the fusion solid objects with  
5 either of said single first solid objects and a combination of  
6 said first solid objects and said second solid objects and at  
7 the same time based on the number of times of registration of  
8 said respective fusion solid objects as said corner-like solid  
9 object by said first solid object detecting means.

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11 4. The vehicle surroundings monitoring apparatus  
12 according to claim 2, wherein said second reliability judging  
13 means judge said reliability of said respective fusion solid  
14 objects based on the number of times of coincidence of said fusion  
15 solid objects with either of said single second solid objects  
16 and a combination of said first solid objects and said second  
17 solid objects.

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19 5. A traveling control system for controlling a  
20 traveling of an own vehicle based on information of a preceding  
21 vehicle selected by said vehicle surroundings monitoring  
22 apparatus described in claims 1, 2, 3 and 4.

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